

***REMARKS/ARGUMENTS***

The amendments set out above and the following remarks are believed responsive to the points raised by the Office Action dated January 24, 2008. In view of the amendments set out above and the following remarks, reconsideration is respectfully requested.

***The Pending Claims***

Claims 3, 12, 13, 15, and 19-31 have been canceled, and claims 1, 2, 4-11, 14, 16-18, and 32-36 remain pending.

Claims 1 and 6 have been amended to describe the invention more clearly. No new matter has been added, the basis for the amended claim language may be found within the original specification, claims and drawings. Claims 1 and 6 are supported at, for example, paragraphs [0047] and [0048], and the Examples. Entry of the above is respectfully requested.

***Information Disclosure Statement***

An Information Disclosure Statement, including a PTO-1449 Form, and copies of the documents (other than U.S. patents and U.S. published applications) listed on the Form, is submitted herewith, along with the appropriate fee. It is respectfully requested that the Examiner initial the appropriate area of the Form, thereby indicating consideration of the documents, and return the initialed Form to Applicants.

***The Office Action***

For convenience, the following remarks will address the rejections in the same order they were raised in the Office Action.

Claims 1, 2, 4-11, 14-18, and 32-36 were rejected under 35 USC 102 as anticipated by, or, in the alternative, under 35 USC 103(a) as obvious over U.S. Patent 5,811,251 to Hirose et al. (hereinafter referred to as "Hirose et al.").

Claims 1, 2, 4-11, 14-18 and 32-36 were rejected under 35 USC 103(a) as being unpatentable over U.S. Patent 5,198,505 to Sipsas et al. (hereinafter referred to as "Sipsas et al."); U.S. Patent 5,053,132 to Sirkar (hereinafter referred to as "Sirkar"); U.S. Patent 5,130,024 to Fujimoto et al. (hereinafter referred to as "Fujimoto et al."); U.S. Patent 5,718,957 to Yokoe et al. (hereinafter referred to as "Yokoe et al."); U.S. Patent 5,158,680 to Kawai et al. (hereinafter referred to as "Kawai et al."); U.S. Patent 5,437,900 to Kuzowski (hereinafter referred to as "Kuzowski"); and/or Hirose.

Each of these rejections is separately and respectfully traversed.

The Office Action alleges there are two embodiments described in Hirose et al.: a first embodiment starting with hydrophilic PTFE and making hydrophobic patterns on it, and a later embodiment starting with hydrophobic PTFE and then making hydrophilic patterns (Example 8). The Office Action concludes that both embodiments anticipate the invention according to claims 1, 2, 4-11, 14-18, and 32-36.

However, as evidenced in the attached Declarations under 37 CFR 1.132 by Thomas C. Gsell, Ph.D., and Abdoulaye Doucouré, Ph.D., these conclusions are incorrect.

Dr. Gsell has over 27 years of experience with Pall Corporation in the areas of membrane and fibrous media technology. He has a Ph.D. in Polymer Science and Engineering from Polytechnic University, and an M.S. in Polymer Chemistry from Florida State University. He is an inventor on 72 U.S. Patents.

Dr. Doucouré, one of the inventors of the claimed subject matter, has, including his doctoral and post-doctoral studies, over 15 years of experience in the areas of membrane and thin film technology. He has both a Ph.D. in Materials Chemistry and a Diplome d'Etudes Approfondies (M.S.) Concentration, Polymers, Interface and Amorphous States, from the University of Montpellier II.

With respect to the alleged "hydrophilic" PTFE embodiment (first embodiment) in Hirose et al., Drs. Gsell and Doucouré each individually state:

Based upon my experience, even assuming that the reference to "hydrophilic" PTFE (Hirose et al. col. 3, lines 54-55) refers to a membrane

that was not surface modified with a cross-linked coating, I believe that reference to “hydrophilic” refers to a PTFE membrane that has been pre-wetted with a low surface tension fluid, e.g., an alcohol, or refers to a PTFE membrane that was irradiated with an electron beam or gamma rays. Based upon my knowledge, a PTFE membrane pre-wetted with an alcohol, or irradiated with an electron beam or gamma rays, will not have, for example, surfaces having both an F/C ratio of about 1.2 or more and an O/C ratio in the range of from about 0.01 to about 0.15.

(Gsell Declaration, ¶6; Doucouré Declaration, ¶9).

With respect to the alleged second embodiment (Example 8) in Hirose et al., Dr. Doucouré states:

[U]nder my supervision, two PTFE membranes were prepared as described in Example 8 of Hirose et al. (that referred to following the procedure described in Example 34 in U.S. Patent 4,618,533). The resultant coated membranes were analyzed with respect to the F/C and O/C ratios. The first membrane had an F/C ratio of 1.03 and an O/C ratio of .29, and the second membrane had an F/C ratio of .83 and an O/C ratio of .28.

(Doucouré Declaration, ¶10).

Thus, Hirose et al. fails to disclose or suggest the invention as claimed in amended independent claims 1 and 6.

With respect to the rejection under 35 USC 103, and in view of the factors set forth in *Graham v. John Deere Co.*, the differences between claimed invention and the cited references, i.e., Sipsas et al, Sirkar, Fujimoto et al., Yokoe et al., Kawai et al., Kuzowski, and/or Hirose et al., are such that the membranes according to amended independent claims 1 and 6 would not have been obvious to one of ordinary skill in the art.

While the Office Action states Sipsas teaches hydrophilizing a PVdF membrane by heating, or heating followed by hydrophilizing, Sipsas does not teach that heat treatment renders a PVDF membrane hydrophilic. Rather, as set forth in Sipsas, e.g., col. 2, lines 42-50, Sipsas

emphasizes that heating before a *separate* hydrophilic treatment alters the crystallinity of the PVDF membrane. The membrane disclosed by Sipsas must be made hydrophilic by another process, i.e., not by the disclosed heat treatment.

With respect to the conclusion in the Office Action stating “Sipsas would make the claims obvious because PTFE is expected to behave similarly to PVdF, Dr. Doucouré states:

Since, for example, PTFE and PVDF membranes have different backbones, and, for example, different melting points (m.p. PTFE = 330 ° C; m.p. PVDF = 145 ° C) and different stabilities in sodium hydroxide (PTFE is stable when immersed in NaOH, PVDF is not) I do not understand what the Office Action means by the statement that “PTFE is expected to behave similarly to PVdF.”

(Doucouré Declaration, ¶14).

Moreover, while the Office Action refers to Yokoe et al., the reference is directed to a fuel hose and thus would be impermeable to gasoline, and, since a fuel hose is designed to prevent gasoline from passing through, Yokoe et al. certainly does not lead one to a microporous membrane.

As for the other references, there is no mention in Sirkar, Fujimoto et al., Kawai et al., or Hirose et al. of, for example, CWST, wetting/dewetting ratio, F/C ratio, or O/C ratio.

Moreover, in addition to failing to mention CWST, wetting/dewetting ratio, F/C ratio, or O/C ratio, Sirkar and Kuzowski merely teach surface modification, *see* Sirkar (e.g., col. 4, lines 50-60), wherein it is emphasized that only “one side” that is modified, not the entire membrane, and *see* Kuzowski (e.g., col. 7, lines 47-50) teaching the use of rf gas plasma for surface treatment. More importantly, however, Kuzowski states that the treatment increases hydrophobicity (which would decrease the CWST (whatever it is) to below the untreated value, the untreated value already being less than the CWST values in any of the pending claims) and states that even after “prolonged treatment,” there is a limit to the “maximum achievable depth of fibril removal” (col. 8, lines 39-42; *see also*, lines 43-46).

In addition to failing to mention CWST, wetting/dewetting ratio, F/C ratio, or O/C ratio, Fujimoto et al. and Kawai et al. merely teach coating the pores of a membrane with a hydrophilic fluorine-containing copolymer (e.g., Fujimoto et al., Abstract), and “rendering the fine pores hydrophilic” and depositing various wetting agents on the membrane (e.g., Kawai et al., col. 7, lines 19-24). Additionally, since Fujimoto et al. and Kawai et al. teach coating the membranes to provide the desired characteristics, they fail to lead one to the invention according to claim 6, reciting, *inter alia*, a membrane free of a coating. The deficiencies of Hirose et al. have been noted above, e.g., neither the “first embodiment,” nor the “second embodiment,” provides a PTFE membrane comprising first and second surfaces wherein surfaces have both an F/C ratio of about 1.2 or more and an O/C ratio in the range of from about 0.01 to about 0.15.

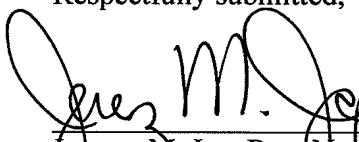
In summary, in view of the *Graham* factors, one of ordinary skill in the art would not be led to the subject matter of amended claims 1 and 6. Since the independent claims are allowable for the reasons set forth above, the dependent claims are allowable as they depend from the novel and non-obvious independent claims.

For the reasons set forth above, reconsideration of the rejections is respectfully requested.

*Conclusion*

If, in the opinion of the Examiner, a telephone conference would expedite the prosecution of the subject application, the Examiner is invited to call the undersigned attorney.

Respectfully submitted,



\_\_\_\_\_  
Jeremy M. Jay, Reg. No. 33,587  
DEYDIG, VOIT & MAYER  
700 Thirteenth Street, N.W., Suite 300  
Washington, DC 20005-3960  
(202) 737-6770 (telephone)  
(202) 737-6776 (facsimile)

Date: 22 July 2008